

WILL A TWENTY-FIRST CENTURY LOGISTICS MANAGEMENT SYSTEM
IMPROVE FEDERAL EMERGENCY MANAGEMENT AGENCY'S
CAPABILITY TO DELIVER SUPPLIES TO CRITICAL
AREAS, DURING FUTURE CATASTROPHIC
DISASTER RELIEF OPERATIONS?

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General Studies

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ABSTRACT

WILL A TWENTY-FIRST CENTURY LOGISTICS MANAGEMENT SYSTEM IMPROVE FEDERAL EMERGENCY MANAGEMENT AGENCY'S CAPABILITY TO DELIVER SUPPLIES TO CRITICAL AREAS, DURING FUTURE CATASTROPHIC DISASTER RELIEF OPERATIONS?, by MAJ Glenda A. Gill, USA, 85 pages.

The United States Homeland Security's Federal Emergency Management Agency (FEMA) must be prepared at all times to supplement state and local emergency personnel, or to provide logistics support during disaster relief operations. A significant number of people criticized FEMA's slow response to Hurricane Katrina, one of the worst natural disasters in U.S. history. Based on lessons learned, Homeland Security Secretary Michael Chertoff stated in his testimony to the Senate Committee on Homeland Security and Governmental Affairs on 15 February 2006, that FEMA's ability to get supplies to the needed areas in a timely manner was limited because its logistics systems were not adequate for an enormous catastrophic disaster. Secretary Chertoff also stated the first step to improving FEMA's capability was to work with other federal agencies and private businesses to create a twenty-first century logistics management system. According to the *Logistics Management Support Annex of the Federal Response Plan*, dated January 2003, managing logistics is a process of planning, preparing, implementing, and evaluating all logistics functions in support of an activity or operation. This thesis will define a twenty-first century logistics management system, examine FEMA's logistics management system during Hurricane Katrina, and determine what changes must occur to strengthen it. Finally, recommendations will be made on how FEMA can provide quality logistics support for future catastrophic disaster relief operations.

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ACRONYMS

DHS	Department of Homeland Security
DLA	Defense Logistics Agency
DOS	Day of Supply
EFS	Emergency Support Functions
EMAC	Emergency Management Assistance Compact
ERT	Emergency Response Team
ERT(A)	Emergency Response Team (Advance Element)
FEMA	Federal Emergency Management Agency
FOSA	Federal Operational Staging Area
GPS	Global Positioning System
HSPD	Homeland Security Presidential Directive
HQ	Headquarters
ICS	Incident Command System
INS	Incidents of National Significance
JFO	Joint Field Office
MOB	Mobilization
MRE	Meals Ready to Eat
NIMS	National Incident Management System
NORTHCOM	Northern Command
NRP	National Response Plan
SCM	Supply Chain Management
US	United States

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CHAPTER 1

INTRODUCTION

Hurricane Katrina was one of the worst natural disasters in our Nation's history and has caused unimaginable devastation and heartbreak throughout the Gulf Coast Region. A vast coastline of towns and communities has been decimated.¹

President George W. Bush, September 2005

Overview

This quotation is from “Proclamation by the President of the United States of America: National Day of Prayer and Remembrance for the Victims of Hurricane Katrina.” Disasters usually happen unexpectedly, but Hurricane Katrina was predicted to occur at least two weeks in advance by the National Hurricane Center in Miami, Florida. Max Mayfield, the Director of the National Hurricane Center, noticed the beginning of Hurricane Katrina as winds traveled over the Ethiopian highlands in early August 2005.² Mayfield met with Federal Emergency Management Agency (FEMA) officials and emergency managers from “Florida, Alabama, and Georgia” via teleconference to warn them “not to believe the National Weather Service’s projections of the storm strength” on 25 August 2005.³ He stated that the National Hurricane Center was projecting the storm to be a strong Category 3, but there was potential for it to be much stronger.

Hurricane Katrina landed three times along the United States (US) coast and reached Category 5 at its highest level of strength. On 23 August 2005, the storm initially developed into a tropical depression in the southeastern part of the Bahamas. Two days later, it became a Category 1 storm before making its first landing between Hallandale Beach and North Miami Beach, Florida. Hurricane Katrina made its second landing as a

Category 4 hurricane in Plaquemines Parish, Louisiana, on 29 August 2005. Winds were recorded at over 140 miles per hour in southeastern Louisiana, while winds in New Orleans topped 100 miles-per-hour. When Hurricane Katrina made its third landfall along the border of Mississippi and Louisiana, winds were recorded at 125 miles-per-hour. The National Oceanic and Atmospheric Administration's Tropical Prediction Center explained that the force winds of the hurricane broadened up to 190 miles from the middle of the storm while the "tropical storm-force winds extended for approximately 440 miles."⁴ Hurricane Katrina proved to be one of the worst natural disasters in the history of the US. The force and the amount of wind associated with Hurricane Katrina resulted in a surge larger than any maximum surge recorded in previous hurricanes. Buildings and roads were destroyed by storm surges of up to 30 feet, elevated winds, and strong wave movement. In addition to the physical destruction, over 1,200 people died and many survivors were left displaced and isolated. Although the Department of Homeland Security's (DHS) FEMA was forewarned about Hurricane Katrina, it was not adequately prepared to supplement state and local emergency personnel or to provide logistics support during the disaster relief operation.⁵

According to CNN, "Report: Criticism of FEMA's Katrina response deserved," the Homeland Security's FEMA has been heavily criticized for its slow response.⁶ Based on the report, *The Federal Response to Hurricane Katrina: Lessons Learned*, mandated by President George W. Bush, FEMA's slow response was a result of challenges with communications, logistics management, tracking assets, situational awareness, debris removal, financial accountability, victim registration, and contracting. In order to ensure FEMA's capability in providing supplies to the most important areas during future

disaster recovery operations, the Secretary of Homeland Security, Michael Chertoff, proposed creating a twenty-first century logistics management system that will include a logistics supply chain linking federal agencies with private businesses. This extended system will also incorporate a management structure that enhances its ability to track and deliver commodities to those in need. Even though FEMA has taken responsibility for its inadequate logistics system, the task of providing logistics support is not defined in its mission statement.

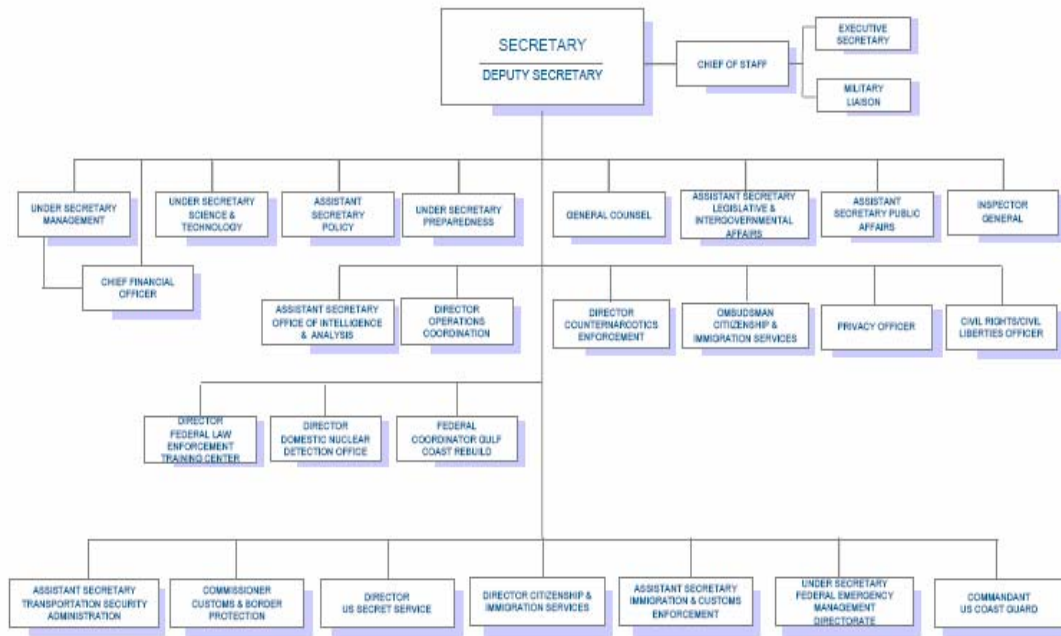
FEMA Mission:

DISASTER. It strikes anytime, anywhere. It takes many forms -- a hurricane, an earthquake, a tornado, a flood, a fire or a hazardous spill, an act of nature or an act of terrorism. It builds over days or weeks, or hits suddenly, without warning. Every year, millions of Americans face disaster, and its terrifying consequences.

On March 1, 2003, the Federal Emergency Management Agency (FEMA) became part of the U.S. Department of Homeland Security (DHS). FEMA's continuing mission within the new department is to lead the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program.⁷

According to the Report of the Committee on Homeland Security and Government Affairs, the *Homeland Security Act* moved FEMA, its responsibilities, liabilities, and assets to the Emergency Preparedness and Response Directorate of DHS. FEMA held its name and its director was named Under Secretary of Emergency Preparedness and Response (see figure 1). Even though DHS was formed during the 11 September period, its primary mission included implementing all functions of the units transferred to the Department, "including acting as a focal point regarding natural and manmade crisis and emergency planning."⁸

Department of Homeland Security Organization Chart



July 2006

Figure 1. Organization of the Department of Homeland Security

Source: Department of Homeland Security, Department of Homeland Security Organization Chart; available from http://www.dhs.gov/xlibrary/assets/DHS_OrgChart.pdf; Internet; accessed 10 December 2006.

Research Questions

The primary research question of this thesis is: Will a twenty-first century logistics management system improve FEMA's capability to deliver supplies to critical areas, during future catastrophic disaster relief operations?

In order to answer this question, it is necessary to define what a twenty-first century logistics management system means for FEMA, examine FEMA's required capabilities, FEMA's capabilities during the Hurricane Katrina disaster relief operation, and assess the DHS's progress in establishing a twenty-first century logistics management system.

Assumptions

Even though FEMA has trained for national emergencies over the years, it was unprepared to provide supplemental support to state and local officials to assist in the disaster relief effort focused on the flooding and devastation that resulted from Hurricane Katrina. Catastrophic incidents are usually unpredictable and if there are no changes to FEMA's mission statement, the following assumptions are made in completing this thesis:

1. There will be another catastrophic disaster in the US.
2. FEMA will continue to be the lead agency responsible for managing federal relief efforts during incidents of national significance (INS).

Key Terms

In order to gain a clear understanding of the terminology used in this work, the definitions of key terms are listed below. These definitions can be found both in the *Logistics Management Support Annex of the Federal Response Plan*, dated January 2003, and Appendix 1, *Glossary of Key Terms*, of the *National Response Plan*, dated December 2004.

Asset Visibility: Monitoring inventory levels of goods that can be used for disaster operations, when they are moved from storage sites to designated locations.

Catastrophic Disaster: A catastrophic disaster is an unexpected, natural or man-made disaster that can occur without warning.

Commodities: Commodities are articles of commerce; a good or service that is exchanged for money.

Emergency Support Function (EFS): A grouping of government and certain private-sector capabilities into an organizational structure to provide the support, resources, program implementation, and services that are most likely to be needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal, when feasible, following domestic incidents.

First Responders: State and local government emergency officials to include fire departments, police forces and emergency medical services.

Incidents of National Significance (INS): An actual or potential high-impact event that requires vigorous coordination of federal response, in order to save lives and minimize damage, and provide the foundation for long-term community and economic recovery.

Joint Field Office (JFO): A temporary federal facility established locally to provide a central point for federal, state, local, and tribal executives with responsibility for incident oversight, direction, and or assistance to effectively coordinate protection, prevention, preparedness, response, and recovery actions.

Logistics: Logistics is the art of planning, organizing, and managing activities that provide commodities or services.

Logistics Management: Logistics management is the process of planning, preparing, implementing, and evaluating all logistics functions in support of an operation or activity.

National Incident Management System (NIMS): A system mandated by Homeland Security Presidential Directive (HSPD)-5 that provides a consistent, nationwide approach for federal, state, local, and tribal governments; the private sector; and non-governmental organizations to work

Supply Chain Management: Supply Chain Management is the management of information, material, and funding from the supplier to the customer.

Limitations

This research study will be limited to FEMA's capability to deliver supplies to critical areas during future catastrophic disaster relief operations. Investigating other FEMA challenges during the Hurricane Katrina relief operation is too broad and complex for the scope of this thesis.

Significance of the Study

This topic is important because FEMA, a federal agency, was unable to satisfactorily accomplish its mission after one of the worst natural disasters in the US: Hurricane Katrina. According to FEMA's own mission statement, it has the critical mission of preparing the nation for any type of natural disaster and for training its subordinate organizations in each state. Based on its response to Hurricane Katrina, there

is uncertainty about FEMA's ability to respond effectively to future catastrophic disasters.

Federal Emergency Management Agency

According to FEMA, it has over 2,600 full-time employees who work at its headquarters in Washington, DC, in addition to regional and area offices around the US, the Mount Weather Emergency Operations Center and the National Emergency Training Center in Emmitsburg, Maryland. FEMA also has almost 4,000 reserve disaster assistance employees, who are available for deployment after disasters. FEMA often partners with other organizations that are a part of the nation's emergency management system. These organizations include state and local emergency management agencies, twenty-seven federal agencies and the American Red Cross.⁹

In addition, FEMA has eight logistics centers in the US and three offshore storage sites. These centers are located in the vicinity of Atlanta, Georgia; Berryville, Virginia; Cumberland, Maryland; Fort Worth, Texas; Frederick, Maryland; San Jose, California. The three offshore storage sites are located in Guam, Hawaii, and Puerto Rico. These centers provide support to first responders with all of the necessary equipment to manage emergency situations. They also provide resources for saving and sustaining lives to the states that need them for disaster victims. FEMA has access to 50 additional storage facilities used by its National Disaster Medical System to store medical equipment and supplies over the country and 252 pre-positioned disaster supply containers located in logistics centers and fourteen states. These additional storage facilities give FEMA the capability to expedite the shipment of emergency commodities to any disaster in the US or its territories. Most of the logistics centers provide blankets, meals ready-to-eat

(MREs), bottled water, generators, cots, blankets, tarps, and blue roof sheeting, which can be distributed through the state and country distribution points in time of need. In addition to the resources noted above, FEMA has two centers that provide specialized resources: the Berryville, Virginia center, stores and maintains electronics and computer equipment primarily for disaster field office operations and the Frederick, Maryland, center provides emergency medical equipment and supplies for emergency medical operations in areas affected by disasters.

With the organization of DHS in mind, this study will analyze FEMA's logistics capabilities during the Hurricane Katrina disaster relief operation and determine what a twenty-first century logistics management system would mean for FEMA. Managing logistics in the future will entail better supply tracking systems and information sharing among federal, state, and local emergency officials. Logistics is also important in conducting disaster relief in the most commonly recognized types of disasters, such as floods, tornados, earthquakes, volcanic eruptions, tsunamis, avalanches and in some cases, droughts/famine and blizzards.¹⁰ As with Hurricane Katrina, any of these disasters can happen suddenly or develop over a period of time. Most of them are unpredictable, but some floods and famines can be gradual, leading to catastrophic disaster. The next chapter will review pre-Hurricane Katrina, disaster relief operations, logistics management and the definition of a Twenty-First Century Logistics Management System, Homeland Security's FEMA policies and procedures, and actions taken since Hurricane Katrina.

¹The White House, Proclamation by the President: National Day of Prayer and Remembrance for the Victims of Hurricane Katrina; available from <http://www.whitehouse.gov/news/releases/2005/09/print/20050908-12.html>; Internet; accessed 15 May 2007.

²Christopher Cooper and Robert Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security* (New York, NY: Times Books, 2006), 95.

³*Ibid.*, 99.

⁴Department of Homeland Security, Federal Emergency Management Agency, About Hurricane Katrina; available from http://www.fema.gov/hazard/flood/recoverydata/katrina/katrina_about.shtm; Internet; accessed 14 May 2007.

⁵*Ibid.*

⁶Mike M. Ahlers, CNN Washington Bureau, Report: Criticism of FEMA's Katrina Response Deserved, 14 April 2006; available from <http://edition.cnn.com/2006/POLITICS/04/14/fema.ig/index.html>; Internet; accessed 14 May 2007.

⁷Department of Homeland Security, FEMA's Mission Statement; available from <http://www.fema.gov/about/index.shtm>; Internet; accessed 14 May 2007.

⁸United States Senate, Report of the Committee on Homeland Security and Governmental Affairs, Hurricane Katrina: A Nation Still Unprepared; available from http://hsgac.senate.gov/_files/Katrina/FullReport.pdf; Internet; accessed 14 May 2007.

⁹Department of Homeland Security, About FEMA; available from <http://www.fema.gov/about/index.shtm>; Internet; accessed 14 May 2007.

¹⁰Thomas Songer, Most Widely Recognized Disasters; available from <http://www.pitt.edu/~epi2170/lecture15/sld006.htm>; Internet; accessed 14 May 2007.

CHAPTER 2

LITERATURE REVIEW

Introduction

FEMA learned many valuable lessons from the Hurricane Katrina experience. During the disaster relief operation, the organization's capabilities were overwhelmed, after receiving requests from local and state government officials to provide supplemental support. According to Homeland Security Secretary Michael Chertoff, the federal government is responsible for meeting the requests from the state during and after a disaster. As seen during the Hurricane Katrina disaster relief operation, the organization provided logistics support for search and rescue, established disaster centers, provided food, water and ice, processed federal disaster claims, and participated in short- and long-term public works projects, such as removing debris and rebuilding infrastructure. However, FEMA's effectiveness in carrying out its role was harshly criticized. In order to place this study in context, the review of literature will focus on five main areas: (1) pre-Hurricane Katrina, (2) disaster relief operations, (3) logistics management and defining a twenty-first century logistics management system, (4) Homeland Security's FEMA policies and procedures, and (5) actions taken since Hurricane Katrina.

Pre-Hurricane Katrina

FEMA acknowledged managerial and logistical problems within its organization through an independent study in 2005, by the Mitre Corporation and training exercises, prior to Hurricane Katrina. Constant distractions impacted the amount of time FEMA had to institute the recommendations from the study and exercises. Those distractions were

associated with the DHS reorganizations, a lack of people and funding, the daily missions of responding to disasters, the bureaucratic processes and the shift in priorities post 11 September. Despite former FEMA Director Michael Brown's efforts to correct deficiencies within the agency prior to the storm, time did not allow for the establishment of a more efficient logistics management system or resolution of the managerial problems. Results of the Mitre Corporation Study, the effects of 11 September on priorities and results of training exercises are detailed below.

According to a CNN Report, "Pre-Katrina study exposed FEMA woes," an independent study conducted by the Mitre Corporation warned of managerial and logistical weaknesses at FEMA months before its criticized response to Hurricane Katrina.¹ The 2005 study forewarned there were vague lines of communication within FEMA; a lack of top-level emergency management expertise; low morale; and a lack of personnel, training and funding. The FEMA Director at that time, Michael Brown, commissioned the study because he was aware the agency had problems with responding to hurricanes in Florida during 2004, even though FEMA received general praise for its work. Brown stated in 2006:

I wanted to find out what was causing those glitches and those problems so we could fix it, so that we really could live up to the reputation that we had, because behind the curtain, it wasn't all that pretty, Brown told Senate investigators in remarks obtained by CNN. I mean our logistics just sucked. It was awful.²

The Mitre Corporation conducted interviews with top-level FEMA officials in the early portion of 2005 and provided feedback to Brown that included candid opinions from his co-workers on FEMA's capabilities. Two comments from this report were: "No

one's in charge. Everyone's in charge," and "If the White House asks, 'Where are the water trucks?' I can't tell them."³

When Brown appeared before the Senate Homeland Security and Government Affairs Committee, which investigated the government's response to Hurricane Katrina, he told the investigators that he agreed with many of the findings in the Mitre Corporation report, but there were many challenges in making changes. He said among them were the constant distractions associated with the DHS reorganizations, a lack of people and funding, the daily missions of responding to disasters and the bureaucratic processes. When Brown was asked if he wished he had taken action on some of the Mitre recommendations, he said, "Absolutely."⁴

In addition to managerial and logistical problems at FEMA, critics have stated that there was a shift in FEMA's priorities after the 11 September attacks. According to an MSNBC report, "Was FEMA ready for a disaster like Katrina?, the terrorists attacks in 2001 changed the priorities and focus of FEMA. Former officials say 11 September diverted attention from natural disasters, such as Hurricane Katrina, which had been FEMA's primary focus."⁵ NBC News acquired a government document that shows how drastically the focus shifted to terrorism. It is dated July 2004, and listed 222 upcoming FEMA and homeland security exercises scheduled to prepare for national emergencies. Only two of the exercises involved hurricanes. "And even in both of those cases, they're dealing with what would happen if there were a terrorist attack associated with a hurricane event," according to NBC News analyst William Arkin.⁶

It appeared that the federal government did not follow up on a FEMA led exercise on 16 July 2004, that very closely resembled the New Orleans disaster.⁷ The training

scenario predicted approximately 20,000 people would die in the storm because of wind or flooding.⁸ According to Cooper and Block (2006), that disaster was called Hurricane Pam. It was depicted as a faintly oversized Category 3 hurricane with 125 miles-per-hour winds. The storm was set apart of its speed, large amounts of rain, and its fast movement toward New Orleans. During the exercise, the National Weather Service predicted the storm would touch down in New Orleans, as it did on 29 August 2005.⁹ One researcher, Ivor Van Heerden, spoke of the thousands of people who died as a part of the scenario.

“What bothers me the most is all the people who’ve died unnecessarily,” said Ivor Van Heerden, a hurricane researcher from Louisiana State University, who was in charge of the exercise. Van Heerden said the federal government did not take the exercise seriously. In *The Storm: What Went Wrong During Hurricane Katrina - the Inside Story from One Louisiana Scientist*, Van Heerden and co-author Mike Bryan challenged the official Hurricane Katrina version of events by revealing information about the poor construction of levees in New Orleans, which were the responsibility of the US Army Corps of Engineers.

“Those FEMA officials wouldn’t listen to me,” Van Heerden said, “Those Corps of Engineers people giggled in the back of the room when we tried to present information.” One recommendation from the exercise was that tent cities should be prepared for those, who would become homeless. Van Heerden was told that Americans do not live in tents. However, some said it is not fair to blame the federal government because no amount of planning could have adequately prepared it to provide an effective response.¹⁰

According to Frank Cilluffo, a former Bush administration aide for homeland security, the government has trained for similar scenarios, but it is different when the crisis is unfolding. There have also been some arguments among homeland security officials that no one predicted that flooding and devastation would affect both New Orleans and the Gulf Coast.¹¹

The numerous managerial and logistical problems acknowledged by FEMA's former director were overshadowed by DHS bureaucracy and post 11 September change in priorities. Results of the Mitre Corporation Study, the effects of 11 September on FEMA's priorities and the results of training exercises identified problems that were ignored by some and too numerous or complex for others to fix within the contextual timeframe. Resolution of logistics management issues is a recurring theme on FEMA's post-Katrina list of problems and is critical to FEMA's capability to effectively respond to the country's future natural disasters and to harsh criticism.

Disaster Relief Operations

Even though there were many challenges during the Hurricane Katrina recovery effort, the lessons learned will be invaluable in conducting future catastrophic disaster relief operations. Key lessons learned included the need for a transparent logistics system and an increased capability for public health and medical support. FEMA's capability to adequately respond to future INS will depend on its ability to provide sufficient resources to accommodate disaster victims.

Cooper and Block analyzed the post Hurricane Katrina US emergency response system by conducting face-to-face, one-on-one interviews with federal, state, and local officials in an effort to determine deficiencies with the US emergency response system.

An analysis of the interviews revealed that the US is incapable of handling major emergencies to include floods, fires and terrorist attacks. In addition to the information gathered by Cooper and Block, the significant challenges of Hurricane Katrina were also highlighted in the report, *The Federal Response to Hurricane Katrina: Lessons Learned*, mandated by President George W. Bush.¹² Some of the critical challenges described in this report were logistics, evacuations, public health, and medical support. The span of the hurricane, the impact to city infrastructures, and the limited response capabilities of state and local officials were key factors in creating a strong need for federal assistance. According to this report, the system for delivering vital assets and humanitarian aid proved to be inefficient. The extremely “bureaucratic supply processes of the Federal government,” such as using its procurement system was not adaptable and capable enough and fell short of using resources in “the private sector and 21st Century advances in supply chain management.”¹³

In reacting to the aftermath of the storm, federal managers experienced challenges in determining the necessary and available resources. Even when they understood what was required, they could not easily determine if the federal government owned the resources or recognized any available alternatives. In addition, FEMA’s inability to track assets in “real-time,” decreased federal managers’ capability to gain and maintain the status of shipped resources. The “logistics system for the 21st Century should be a fully transparent, four-tiered system.”¹⁴ First, state and local governments must pre-contract for commodities and assets that will be essential for responding to all vulnerabilities. Second, the Emergency Management Assistance Compact (EMAC) process should be used, if pre-contracting fails. Third, if the EMAC proves to be insufficient, the federal

government, with its transparency, must be able to aid state and local governments in moving supplies on a regional basis. Fourth, FEMA has to be able to enhance state and local logistics systems, especially during catastrophic disasters, with the most modern approach to supply management.¹⁵

According to a report of the Committee on Homeland Security and Governmental Affairs, “Hurricane Katrina: A Nation Still Unprepared,” the EMAC is an agreement to provide mutual aid when a disaster occurs. It is managed by the National Emergency Management Association, who provides the daily technical support for EMAC education and operations. When emergencies occur, National Emergency Management Association staff works with EMAC member states to ensure that a smooth relay of information passes through its system to coordinate relief operations.¹⁶ Emergency officials from both Louisiana and Mississippi requested assistance through the EMAC system during Hurricane Katrina. Since the EMAC was approved by Congress in 1996, as Public Law 104-321, all 50 states in addition to Puerto Rico, the Virgin Islands, and the District of Columbia have endorsed EMAC. A state’s only requirement to join is to have its legislature approve the language of the compact.¹⁷ Every member state responded to the Louisiana and Mississippi request by providing a variety of equipment, medical support, and supplies. The results were the largest EMAC response in US history. Ultimately, FEMA must be in a position to enhance state and local systems with an effective approach to managing commodities.

Lesson Learned:

The Department of Homeland Security, in coordination with state and local governments and the private sector, should develop a modern, flexible, and transparent logistics system. This system should be based on established contracts

for stockpiling commodities at the local level for emergencies and the provision of goods and services during emergencies. The Federal government must develop the capacity to conduct large-scale logistical operations that supplement and, if necessary, replace state and local logistical systems by leveraging resources within both the public sector and the private sector available.¹⁸

In addition, Hurricane Katrina caused public health and medical support challenges in both Louisiana and Mississippi. The major problems were primarily in New Orleans because of the flooding associated with the storm. Thousands of people needed medical care with more than 200,000 people, many with serious medical conditions, finding themselves without their regular medicine, separated by the flooding and dislodged by the storm. Many large medical centers were completely destroyed and numerous others were not functioning. Almost all small-scaled health care centers were closed. “Although public health and medical support efforts restored the capabilities of many of these facilities, the region’s health care infrastructure sustained extraordinary damage.”¹⁹

Many local and state public health and medical support resources were stressed by storm conditions, which placed a larger responsibility on those individuals deployed from federal agencies. Problems requiring immediate attention included identifying and treating critically sick and wounded patients, managing a large number of seriously ill evacuees with specific medical needs, evaluating the public health threat, and providing assistance to state and local health care officials. The need to “quickly reestablish health care delivery systems and public health infrastructures” was obvious.²⁰

Even though federal, state, and local personnel successfully handled this massive challenge, there were many problems that decreased the reach and capability of the public health and support endeavors. According to the lessons learned, the process of

authorizing reimbursements for medical and public health services, provided by federal agencies, was slow and caused extensive delays. In some cases, the lengthy delays caused slow arrival of federal resources to critical areas. In addition, some federal resources were sent to various locations, but were not properly used. These and other inadequacies were determined to be the results of a divided “command structure for medical response; insufficient patient evacuations; fragile public health infrastructures; unsatisfactory pre-storm warnings to the public and the lack of a standard “electronic health record system.”

Lesson Learned:

In coordination with the Department of Homeland Security and other homeland security partners, the Department of Health and Human Services should strengthen the Federal government’s capability to provide public health and medical support during a crisis. This will require the improvement of command and control of public health resources, the development of deliberate plans, an additional investment in deployable operational resources, and an acceleration of the initiative to foster the widespread use of interoperable electronic health records systems.²¹

Paulison, current Director of FEMA, emphasized the lessons learned must be employed so that when the next disaster occurs, they are better prepared to protect people, prevent suffering, reduce property loss, and respond in an effective manner. In order to get ready for the next disaster, Paulison stated that three areas must be discussed: emergency management partnerships, personal preparedness, and improving the federal government’s ability to respond.²²

Emergency management is a shared responsibility between the local, state, and federal government. The federal government is ready to provide the necessary assistance when the capabilities of the local and state governments are overwhelmed. Hurricane Katrina marked a turning point in the way FEMA will approach its role in managing emergencies. Traditionally, state and local officials have had the primary responsibilities

during disasters. When state and local resources are overwhelmed, they request federal assistance, but in many cases by that time, it is too late. The federal government has to be prepared to engage more proactively in the initial stages of a disaster, even though emergency management should remain first a state and local responsibility. In order for the federal government to be more proactive, Paulison explained that partnerships with state and local governments, nongovernmental organizations, and the private sector would enhance the federal government's ability to identify existing weaknesses. He also said that the federal government should work with states and municipalities to close capability gaps and improve their combined and integrated response. Hurricane Katrina has been valuable at all levels in emphasizing the importance of early and unified engagement.

Personal preparedness is an essential component of emergency management. A recent Harvard survey of Gulf Coast residents revealed that over 25 percent of the participants might ignore a government evacuation order.²³ In his editorial on lessons learned from Katrina, Paulison stated that he was surprised by some people's complacency; residents who do not leave the area as requested, risk their lives, as well as those of first responders. He asserted that people, who are able, must take greater responsibility for their safety and the safety of their families and pets, especially during the immediate hours after a disaster. The more responsibility shouldered by the citizens for their own well being, the more emergency managers will be able to develop plans and distribute resources to those in greater need. Personal preparedness also decreases the risk of exposure. In order to reduce personal vulnerability, citizens must take the needed time

to learn about risks and reduce them. Mitigating risk can have a significant impact in facilitating recovery operations.

According to Paulison's editorial on lessons learned from Katrina, FEMA has taken steps to improve its ability to respond to the next disaster. He declared that FEMA has concentrated on improving responsiveness, customer services, logistics, debris removal, and partnerships with state and local officials. A heavy investment has gone into hiring leaders with emergency management experience to coordinate federal response efforts. FEMA and the DHS have designated the personnel and technology for handling any situation. FEMA's capacity has been improved to a point that 200,000 disaster victims per day can be registered. This increased capacity more than doubles what the agency could handle in 2005, reducing the potential for fraud, waste, and abuse. The capacity to inspect homes has been tripled--increasing to 20,000 home inspections each day following a disaster. FEMA has stockpiled enough food, water, and ice to care for at least 1 million disaster victims per week. They have also enhanced their ability to track and manage the supply chain. In addition, FEMA recently announced enhancements to its Digital Emergency Alert System, which will notify citizens of potential disasters and public hazards that can happen unexpectedly.²⁴

FEMA has also granted almost \$6.1 billion to some 950,000 households for housing and other resources, providing more aid for this disaster than the agency has provided for any other single natural disaster. In his editorial, Paulison stated that FEMA is working hard to be more responsive to disaster victims. Homeland Security Secretary, Michael Chertoff, and President Bush have supported their efforts, and Paulison is

positive that FEMA can develop a premiere emergency response system that will prepare the US for the next disaster and improve its ability to respond in a timely manner.²⁵

I am confident FEMA will regain the confidence of Americans, but we can't do it alone. Effective emergency management requires that every element of the community remain vigilant, prepared and ready to respond. This includes state and local governments, voluntary agencies, the private sector and individuals."²⁶

According to an official at the Fritz Institute, a non-profit organization committed to disaster relief operations, the government should take hints from the private industry about using supply chain management (SCM) systems for managing inventory and predicting demand.²⁷ The organization, based in San Francisco, recently released research findings about managing post-disaster operations. The institute officials are requesting that the government make improvements in disaster planning with new standards in coordination, logistics, and SCM.

Coordination is the first thing. There needs to be a coordination point for [immediate] command and control," said Anysia Thomas, PhD, the institute's managing director, in an interview with Ziff Davis Internet. "But building a supply chain is also critical. The private sector has long used SCM to predict demand, and to gain visibility into inventory. These tools can play a similar role in disaster planning."²⁸

In September 2005, the Fritz Institute co-sponsored a one-day exchange of ideas and best practices called "Effective Disruption Management," which centered on improving the effectiveness of key international disaster relief efforts. The Stanford Business School's Global Supply Chain Management Forum and Center for Social Innovation and the MIT Center for Transportation and Logistics were also co-sponsors. The Fritz Institute has released two reports, based on research of the tsunami disaster. With the assistance of experts, the institute created a supply chain survey around the

devastating tidal wave. In conjunction with the survey research, a team of supply chain executives from businesses in the US and Asia visited areas affected by the tsunami.

Thomas stated during an interview that she thought FEMA should be in charge of establishing the best practice standards for managing disasters in the US. In addition, she recommended that these standards should make the best use of contributions by the experts in state and local government, relief organizations, and those in the business community. She emphasized the notion that government agencies and non-governmental organizations should be able to work together online and to view the types of resources shared, in order to assist disaster victims. Thomas further highlighted what she determined to be “holes in logistics planning” around Hurricane Katrina and the tsunami disaster. According to the institute’s research, 60 percent of the agencies in India claimed that the available warehouse facilities were not sufficient to support the tsunami relief efforts. An additional 40 percent described transportation as unavailable and, therefore, could not carry relief supplies to victims. Thomas said that based on these problems those affected by the tsunami had a perception that supplies had simply been “dumped.”

In Jacqueline Emigh’s “Disasters Demand Supply Chain Software, Research Shows,”²⁹ researchers found that only 26 percent of relief organizations had access to software that provided the ability to track and trace resources, in order to predict the arrival of requested commodities. This article also references a report by the Fritz Institute that stated many organizations relied on technologies that were developed within their organizations--solutions using Microsoft Excel spreadsheets or manual processes for tracking commodities in the field. The institute also found a shortage of trained logistics experts working in the field to deal with the tsunami disaster; inadequate assessment and

planning; and limited partnerships and management. These were also characteristics of FEMA during the Hurricane Katrina disaster relief operation. Researchers found major differences in the way India and Sri Lanka governments handled the tsunami relief efforts. The people in India, affected by the tsunami, ranked the government as the primary aid provider. Reports indicated positive satisfaction levels regarding the visibility of district level administrators in providing and coordinating disaster relief. On the other hand, the people in Sri Lanka, affected by the tsunami, reported a lack of government involvement in providing assistance, especially during the first 48 hours. The disaster relief organizations in Sri Lanka ranked the military, faith groups, and medical organizations as being valuable in assisting with relief in the country.³⁰

The significant lessons learned were the need for a transparent logistics system and an increased capability for public health and medical support. FEMA's capability to adequately respond to future INS will depend on its ability to provide sufficient resources to accommodate disaster victims. Although there were many challenges during the Hurricane Katrina disaster relief operation, the lessons learned will be important in responding to future catastrophic disasters.

Logistics Management

W. G. Tuttle states defense logistics must accomplish the objectives of timely force delivery and sustainment to the combatant commanders and the smallest possible footprint in battle spaces. The logistics principle of responsiveness (timely delivery) is also applicable to FEMA logistics management system and the associated supporting principles from Tuttle's book are also considerations for FEMA in ensuring the appropriate amount of commodities are staged and delivered in the right amount, the right

time, and the right place. They are (1) accountability for process performance, (2) continuously shared knowledge of asset status, requirement of the campaign, “customer” status, process barriers, (3) maximized commercial contracting of logistics activities in the Continental US, forward bases, and intermediate staging and support bases, (4) use of the “comparative advantage” concept for allocation of logistics tasks to coalition partners, and (5) simplicity in planning and operations (application of a “principle of war”). These principles are also important to managing FEMA’s logistics processes to ensure the logistics management system is efficient and can support any incident of national significance.

In the second edition of *The Handbook of Logistics and Distribution Management*, Alan Rushton, John Oxley, and Phil Croucher highlight the importance of logistics and its processes. These processes are used to ensure an organization operates successfully, while achieving its primary objectives. According to Ruston, Oxley, and Croucher (2000), one of the major problems with logistics processes is that they are linked into a number of different key elements of the organization, which makes it challenging for logistics operations to be conducted efficiently. Examples of logistics processes include order fulfillment, new product introduction, new product development, product returns, the provision of spares and information management. Logistics processes will differ for organizations based on industry focuses. Part of FEMA logistics process includes seven areas in the supply chain to provide commodities to disaster victims. These areas include FEMA’s logistics centers, commercial storage sites, other federal agency sites, mobilization (MOB) centers, Federal Operational Staging Areas (FOSAs), State Staging Areas and Points of Distribution Sites.³¹ Based on the level of response

required for a catastrophic disaster, these logistics processes are linked to the latest supply chain management technology because supplies are tracked from storage sites to Points of Distribution Sites and when contracts are pre-established with other federal agencies and private businesses, commodities are set aside and stored, in preparation for a national emergency. These two factors are components of a twenty-first century logistics management system. According to FEMA, its logistics centers are permanent locations that receive, store, ship, and recover disaster commodities and equipment. There are four logistics centers in the US, containing general products, three overseas containing general commodities, and two in the US containing special products; computers, office electronic equipment, medical and pharmaceutical caches. The commercial storage sites are owned and operated by private industry, where commodities are stored for FEMA. Examples of other federal agency sites include the Defense Logistics Agency (DLA) and the General Services Administration. The MOB centers, the FOSAs and State Staging Areas are all temporary facilities where commodities, equipment and personnel can be received and pre-positioned for deployment to disaster areas. The points of distribution sites are temporary local facilities operated by the affected state, where commodities can be dispersed directly to disaster victims.³²

FEMA's logistics system during Hurricane Katrina was essential to providing extra food, water, ice, potable toilets, fuel, generators and other pertinent supplies to affected areas. Secretary of Homeland Security, Michael Chertoff, testified that FEMA logistics systems were just not up to the job. Former FEMA Director, Michael Brown, also agreed that FEMA had logistical problems. According to a report of the Committee on Homeland Security and Governmental Affairs, "Hurricane Katrina: A Nation Still

Unprepared,” FEMA pre-positioned more commodities prior to Hurricane Katrina than before any other storm, but it was not adequate to sustain the people, who were left stranded.

State and local officials faced such overwhelming circumstances in some cases that they could not determine or accurately communicate their needs to FEMA. In other cases, flaws were revealed in the system, as prompt acquisition and distribution of assets were hindered by red tape. In some way, each level of government shared some responsibility for the FEMA commodities system failure, after the landfall of Hurricane Katrina. People were forced to endure brutal circumstances, as a result. The Superdome was hot and scattered with human waste, without generators, plumbing, or portable toilets. In Mississippi, the people affected by the storm used public shelters and found sanitation problems, lack of electricity, and shortages of food and water.³³

FEMA’s unsuccessful response to satisfy the basic essential needs, after the hurricane, highlighted past problems with its logistics system. While state and local officials were overwhelmed, the extraordinary demand for commodities fell on the federal government, as predicted during the Hurricane Pam exercise. FEMA’s logistics failure during the crisis was not surprising within FEMA because key leaders knew it did not have the personnel and systems needed to provide an adequate response to a large disaster. A Federal Coordinating Officer, William Lokey, in Louisiana told Committee investigators that FEMA has consistently failed to track supplies and this has been an ongoing problem with disaster relief.³⁴

The report of the Committee on Homeland Security and Governmental Affairs, “Hurricane Katrina: A Nation Still Unprepared,” also stated during 2004, the FEMA

Acting Director of Operations, Ken Burris, submitted an initial request of \$60 million for logistical requirements that included tracking systems for logistics. In 2005, FEMA submitted a proposal to DHS for improvements to its logistics system. The information in the plan reflects the problems of FEMA's aged logistics systems. An example highlighted in the report stated the requirements for warehouse space has increased almost 10 times in some areas, and the transportation requirement has increased 300 percent in three years, while staff support has remained the same for seven years. The conclusion in the proposal stated the logistics system was not functional, which resulted in FEMA's inability to accomplish its mission in accordance with established performance goals.

The lack of sufficient transportation planning was a key factor associated with the movement of commodities. FEMA's Director of Logistics, Gary Moore, stated that FEMA had problems transporting commodities during Hurricane Katrina.³⁵ An example in the report stated on Saturday afternoon, FEMA became aware it had a shortage of truck drivers to deliver equipment and commodities, so resumes were reviewed to employ additional drivers. On Sunday afternoon, the records indicated FEMA was short 68 of the needed 94 drivers, who would move commodities for a brief response effort and 162 drivers for an extended response. Because FEMA's transportation contractor, Landstar, did not own its own vehicles, the situation was extremely challenging. Landstar works with independent drivers only after FEMA submits a request, which can lead to delays. In this case, FEMA had to compete against Landstar, in order to get the number of needed drivers. Finding drivers was difficult because the commodities needed to be moved over a weekend. Possible solutions include prepositioning commodities and equipment or purchasing a fleet of trucks.

According to the report, a shortage of staff also hampered FEMA's logistics response to Hurricane Katrina. In addition to driver shortages, FEMA did not have adequate staff in Louisiana to support a twenty-four-hour operation center after the hurricane's downfall, which required countless people to work for fifty continuous hours. After FEMA examined its response in Louisiana, it was determined the lack of sufficiently trained personnel played a significant role in the poor response to Hurricane Katrina in Louisiana and risked the entire logistics mission.

The logistics plan implemented during Hurricane Katrina was a product of the Hurricane Pam catastrophic-storm exercise that started in 2004, and it was still being developed when Hurricane Katrina occurred. According to the report, the plan envisioned a series of commodity deliveries from federal operational staging areas (FOSAs) to regional staging areas, followed by delivery to local points. Local officials considered the distribution plan for commodities to be one of the most important products from the Hurricane Pam exercise and days before Hurricane Katrina, FEMA officials worked hard to locate, study, and apply the distribution plan.

The guidelines of the Hurricane Pam plan for distributing commodities were not consistent. Based on findings in the report, the section referencing power, water, and ice stated that FEMA would direct the US Army Corps of Engineers to have roughly a day of supply (DOS) of water and ice (1,530,000 gallons of water and 5.5 million pounds of ice), which equaled 322 truckloads and 137.5 truckloads, respectively at Camp Beauregard, a federal designated staging area in Pineville, Louisiana. The pre-planning charts found later in the plan, specified that a DOS of ice and water would be thirty-two to forty truckloads each. The same section reflected one DOS of MREs and tarps to be

fifteen to twenty truckloads, while a DOS of ice and water would be thirty-six to thirty-four truckloads. Before Hurricane Katrina, FEMA had thirty truckloads of water, seventeen truckloads of ice, fifteen trailer loads of MREs and six trailer loads of tarps at Camp Beauregard. At the beginning of the 2005 hurricane season, these commodities were placed at Camp Beauregard, as a new way to speed up the response to hurricanes but FEMA was unable to get additional commodities to Camp Beauregard, as Hurricane Katrina traveled through the Gulf of Mexico. Camp Beauregard was selected because it was considered close enough to rapidly deliver supplies and it was also inland enough to be out of harm's way.³⁶

Major deficiencies were found in pre-staging commodities in Mississippi. According to the report, the Federal Coordinating Officer, William Carwile, expressed his concern with commodities issues through e-mails to his superiors on Sunday. Even though FEMA had requested 400 trucks of ice, 400 trucks of water, and 250 trucks of MREs for the Meridian Naval Air Station, there were only 30 trucks of water, 15 trucks of MREs, 2 trucks of tarps and 30 trucks of ice were staged at the base by the evening hours on 29 August 2005.³⁷

Before a disaster occurs, FEMA's Logistics Response Center is activated by Headquarters (HQ) Logistics, after being notified by the National Response Coordination Center, according to FEMA. A planning session is initiated and coordination is conducted with the Operations and or Logistics Chiefs of the affected Region (Regional Response Coordination Center). The HQ Logistics then identifies MOB Centers, determine commodity consumption based on storm category by running the US Army Corps of

Engineers models and establish a three day stock of supplies. In addition, FEMA conducts the following logistics activities, prior to disaster.³⁸

- Reviews commodity readiness levels
- Mission Assigns the Department of Transportation (DOT/Emergency Support Function, (ESF), #1) to activate the National Transportation Contract. Orders all transportation, loads trailers, and pre-position commodities as necessary.
- Mission assigns the US Army Corps of Engineers (USACE/ESF#3) for support of the ice, water and emergency power missions.
- Coordinate with DLA to draw down on stocks held for FEMA as required.
- Procure additional stock from DLA or other sources as needed
- Activates and deploys MOB Teams, and other Log personnel
- Plans the fulfillment of FOSAs and MOB Centers requirements from fixed storage sites such as Logistics Centers, DLA and/or commercial storage facilities.³⁹

Also according to FEMA, the Region identifies possible FOSAs and completes a request for an initial amount of commodities to be “pushed” to the site by a designated date, which is usually prior to storm conditions affecting the site operations at a staging area. Measures of performance include filling the Emergency Response Teams and Regional requests prior to stopping operations because of the passage of the storm.⁴⁰

After a disaster occurs, the local incident command identifies resources needed to provide relief to victims, which could include equipment or services, according to FEMA. Local emergency officials will work to fill the need from existing resources, but if they are unsuccessful, the requirement will be passed to county or state officials. If the requirement is received by the state, it will work to fill the request with readily available resources, commercial resources, EMAC, or mutual support agreements. If the state is unable to assist local officials, it requests federal assistance from the Region Response Coordination Center/Emergency Response Teams (ERT-A)/JFO Operations section using an Action Request Form.⁴¹ If the items requested are available in the FOSA, the JFO

Operations Section Chief will ensure the request is fulfilled, but if the commodities or equipment is unavailable, the Logistics Chief will be tasked to fulfill the request.

According to FEMA, the JFO Operations Section Chief can fill the request by selecting one of the following:

- Fill from the MOB Center--“pull system”
- If still not readily available, pass the request to the Region or HQ Logistics organizations for fulfillment
- Fill by mission assigning another agency
- Fill by completing a requisition and forwarding to Acquisitions for procurement
- If accelerating requests are out paced by actual demands, Logistics engages in increasing quantities at MOB Centers and/or pushing more product forward to FOSAs and/or State staging areas.⁴²

When the request is validated by the Region or HQ Logistics, a determination is made on how or if the requirement can be met. If feasible, the resource is delivered to the location specified by the JFO Logistics Section Chief. The commodities or equipment can be delivered to any of the following locations and transferred to the control of the State:

- Directly where the resource is needed
- Incident Command Post in a local jurisdiction
- Point of Distribution
- State Staging Area (Most likely place to transfer ownership to the State).
- Federal Operational Staging Area
- MOB Center.⁴³

According to FEMA, the measure of performance is response time. When commodities are restocked, they are replenished at Logistics Centers and DLA and or Commercial stocks. Commodities are also restocked at MOB Centers and FOSAs to a one to three DOS and more, if needed.⁴⁴

Homeland Security's Federal Emergency Management
Agency Policies and Procedures

There are a number of references used to guide FEMA in its mission of leading the effort to prepare the nation for all hazards and effectively managing federal response and recovery efforts following any incident of national significance.⁴⁵ Key documents include the HSPD-5, *Management of Domestic Incidents*, HSPD-8, *National Preparedness and the National Response Plan (NRP)*. The *NRP* is the most important document in understanding Homeland Security. It starts with a letter of agreement signed by federal departments and agencies, who agree to support the *NRP*.

The National Response Plan is an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents. It provides the structure and mechanisms for the coordination of Federal support to State, local, and tribal incident managers and for exercising direct Federal authorities and responsibilities. The *NRP* assists in the important homeland security mission of preventing terrorist attacks within the United States; reducing the vulnerability to all natural and manmade hazards; and minimizing the damage and assisting in the recovery from any type of incident that occurs.⁴⁶

This capstone homeland security document was published in December 2004 and it is currently being reviewed to assess the plan effectiveness, identify improvements, and recommend modifications, in order to reissue the document. The review is scheduled to be complete by June 2007.

In addition to the base document, the *NRP Catastrophic Incident Annex* highlights planning assumptions that must be considered in advance to ensure adequate logistics support during a catastrophic disaster:

1. A catastrophic incident results in large numbers of casualties and/or displaced persons, possibly in the tens of thousands.

2. The response capabilities and resources of the local jurisdiction (to include mutual aid from surrounding jurisdictions and response support from the State) may be insufficient and quickly overwhelmed. Local emergency personnel who normally respond to incidents may be among those affected and unable to perform their duties.

3. A detailed and credible common operating picture may not be achievable for 24 to 48 hours (or longer) after the incident. As a result, response activities must begin without the benefit of a detailed or complete situation and critical needs assessment.

4. Large numbers of people may be left temporarily or permanently homeless and may require prolonged temporary housing.

5. A catastrophic incident has unique dimensions/characteristics requiring that response plans/strategies be flexible enough to effectively address emerging needs and requirements.⁴⁷

Based on the level of response required for a catastrophic disaster, a twenty-first century logistics management system is comprised of three primary components: (1) adequately trained disaster relief personnel, (2) the latest supply chain management technology to track commodities, and (3) pre-established contracts with other federal agencies and private businesses that gives FEMA the capability to provide responsive logistics in any incident of national significance.

According to FEMA, the purpose of the HSPD-5, *Management of Domestic Incidents*, is to enhance the ability of the US in managing domestic incidents by establishing a single NIMS.⁴⁸ This directive outlines policy and the roles of the key players in managing INS:

To prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies, the United States Government shall establish a single, comprehensive approach to domestic incident management. The objective of the United States Government is to ensure that all levels of government across the Nation have the capability to work efficiently and effectively together, using a national approach to domestic incident management. In these efforts, with regard to domestic incidents, the United States Government treats crisis management and consequence management as a single, integrated function, rather than as two separate functions.

The Secretary of Homeland Security is the principal Federal official for domestic incident management. Pursuant to the Homeland Security Act of 2002, the Secretary is responsible for coordinating Federal operations within the United States to prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies. The Secretary shall coordinate the Federal Government's resources utilized in response to or recovery from terrorist attacks, major disasters, or other emergencies if and when any one of the following four conditions applies: (1) a Federal department or agency acting under its own authority has requested the assistance of the Secretary; (2) the resources of State and local authorities are overwhelmed and Federal assistance has been requested by the appropriate State and local authorities; (3) more than one Federal department or agency has become substantially involved in responding to the incident; or (4) the Secretary has been directed to assume responsibility for managing the domestic incident by the President.⁴⁹

The HSPD-8, *National Preparedness and the National Response Plan*, is a directive that establishes guidelines to increase the preparedness of the US to prevent and take action during domestic terrorist attacks, major disasters and other urgent situations requiring a national all-hazards preparedness goal, creating methods for improved delivery of federal assistance to state and local governments, and determining actions to improve the preparedness capabilities of federal, state, and local entities.⁵⁰ This directive is related to HSPD-5, *Management of Domestic Incidents*, in that it is considered a companion document that identify steps to improve the coordination of responses to incidents. In addition, this directive describes how federal departments and agencies are to prepare for a response to include activities that promotes prevention during the initial stages of a terror incident.

In order to ensure the Nation is prepared for INS, the Secretary of Homeland Security is tasked with developing a national domestic preparedness goal in coordination with other federal agencies, while consulting with state and local governments According to FEMA, a collective effort will be made to achieve this goal by:

[P]roviding for effective, efficient, and timely delivery of Federal preparedness assistance to State and local governments; and supporting efforts to ensure first responders are prepared to respond to major events, especially prevention of and response to threatened terrorist attacks.

The national preparedness goal will establish measurable readiness priorities and targets that appropriately balance the potential threat and magnitude of terrorist attacks, major disasters, and other emergencies with the resources required to prevent, respond to, and recover from them. It will also include readiness metrics and elements that support the national preparedness goal including standards for preparedness assessments and strategies, and a system for assessing the Nation's overall preparedness to respond to major events, especially those involving acts of terrorism.

The Secretary will submit the national preparedness goal to the President of the United States through the Homeland Security Council (HSC) for review and approval prior to, or concurrently with, the Department of Homeland Security's Fiscal Year 2006 budget submission to the Office of Management and Budget.⁵¹

Actions Taken Since the Hurricane Katrina Disaster Relief Operation

According to Paulison (2006), one of the clearest lessons regarding communication and situational awareness was that a unified command is essential in responding to disasters. The sharing of real-time information at all levels including local, state, and federal is essential, providing everyone information through a common operational picture. Federal Incident Response Support Teams are in the ready stage to provide situational awareness of disasters. Advances in technology, the establishment of new standards with satellite imagery, upgraded radios, and frequency management are all

contributing to the enhancement of disaster relief operations to include delivering supplies to critical areas during catastrophic disasters.

Training

After FEMA examined its response in Louisiana, it determined the lack of sufficiently trained personnel played a substantial role in the poor response to Hurricane Katrina in Louisiana, and risked the entire logistics operation. Personnel were not trained adequately in emergency management and lacked the experience needed to assist in the response to a catastrophic disaster. FEMA announced a large number of local, state, federal, and other emergency response personnel from around the US have completed the NIMS training, which is important to understanding roles and responsibilities and providing responsive logistics support during a crisis.

According to a news release, “More Than One Million Emergency Personnel Nationwide Complete NIMS-Related Training,” on 9 December 2005, FEMA announced that 1,072,335 local, state, federal, and other emergency response personnel from around the US have completed the NIMS related training that is being offered in an online environment. In addition to NIMS, the courses include a NRP introduction and numerous Incident Command System (ICS) training courses. Another report claimed that as of 4 December 2005, 92 percent (984,029) of the personnel completing the courses are emergency personnel working at local, state, and tribal levels, as well as those from the private sector and voluntary organizations; over a quarter of a million people (250,598) have completed the online ICS courses. More than 77,000 have finished the introduction to the NRP, which was accessible online in October 2004. According to the news release,

the number of personnel trained reflected the adoption of the NIMS and a commitment to learning how the NRP worked.

FEMA's NIMS Integration Center is a key factor to the implementation of NIMS. It is coordinating the development of the National Standard Curriculum for NIMS establishing opportunities for federal training and class offerings that support implementing NIMS. Guidance has also been developed that will assist in clarifying the fundamentals of training courses necessary for NIMS compliance and decrease the factors associated with the training approval process for classes recognized by the program.

Gil Jamieson (2005), Acting Director of the NIMS Integration Center said, "It is critical that we approach incident management in a coordinated, consistent and efficient manner. The NIMS is our nation's incident management system and its full implementation among all jurisdictions and all levels of government must be achieved as quickly as possible."⁵²

Courses, along with four additional introductory ICS classes that are tailored to specific areas including law enforcement and public works, are offered in a Web-based format allowing for independent study. Concurrently, the Center is developing additional ICS courses, including public information and public health. These courses will be entry-level courses appropriate for those working in the ICS environment. New materials will be posted on the Emergency Management Institute training website as soon as it is developed. Implementation of the online version of the NIMS course occurred on 29 June 2004. The additional courses were added and made available online,⁵³ as they were revised for NIMS compliance. NIMS builds on the successful ICS and the demonstrated

principles of unified command, wherein, communication and information management are key features permitting emergency responders and all agency managers a common operating picture promoting a more efficient and effective response.

New Commodity Tracking System

According to Paulison, FEMA has concentrated on improving its operational competencies for the past year, while working to strengthen its logistics management capabilities. Its operational competencies include incident management, operational planning, disaster logistics, emergency communications, customer service to disaster victims and public communication. Based on the 2005 hurricane season, the significant lessons learned were communication, logistics, and disaster assistance to victims.⁵⁴

Communication: Information sharing--probably single largest failure at the local, state, and federal level.

Logistics: Knowing where supplies were and having the ability to deliver them to the right places, at the right time and in the right quantity.

Disaster assistance to victims: Getting identities verified and registered to expedite the delivery of aid.

Michael Chertoff (2006) acknowledged in his speech to the National Hurricane Center on 12 April 2006, that, "FEMA is implementing a new commodity tracking system that will allow real-time visibility into the movement and delivery of supplies, which will improve FEMA's ability to manage and track inventories."⁵⁵ In addition, FEMA signed an agreement with the DLA to influence prime vendor contracts. This agreement will ensure a more rapid and reliable movement of available stockpiles of emergency meals, water, tarps, medical equipment and essential pharmaceuticals.⁵⁶

FEMA Director, R. David Paulison, confirmed in his speech to the National Press Club on 6 December 2006, that FEMA was focused on the improvement of logistical operations within the organization and has taken significant steps to address problems identified during the Hurricane Katrina disaster relief operation.

Paulison (2006) also avowed FEMA is strengthening its logistics management capabilities, which is the key to ensuring visibility of supplies and the ability to deliver them to the right place, the right time, and in the right quantity. Advanced staging of commodities, such as food, water, tarps, and generators allow for rapid delivery to potentially weak areas first. FEMA has executed Phase I of the Total Asset Visibility Program in the Gulf States that are prone to hurricanes by attaining and installing 20,000 Global Positioning System (GPS) units, affording FEMA the capacity of tracking commodities and ensuring they are going to the right place. Additional capabilities and assets are being accessed through its partnership with the DLA. Advanced mission assignments and contracts have been established, as part of contingency planning. Memorandum of Understandings and Interagency Agreements have also been set up with other federal agencies; the private sector, and voluntary agencies in order to conduct advance coordination between organizations and avoid delays in providing needed services to affected communities. In addition, a debris removal contractor registry has been established.

Secretary Chertoff highlighted in his remarks during a 2006 Hurricane Season Press Briefing in Washington, D.C. on 23 May 2006, that steps had been taken over the past six months after Hurricane Katrina to prepare for the 2006 hurricane season.⁵⁷ He was joined by David Paulison, the Acting Director of FEMA at that time, Under

Secretary, George Foresman of the Preparedness Directorate of DHS, Assistant Secretary of Defense for Homeland Defense, Paul McHale from the Defense Department, Admiral Tim Keating, Combatant Commander of Northern Command, and General Steven Blum from the National Guard Bureau. According to Chertoff, the steps taken over the past six months after Hurricane Katrina would increase their ability to respond to future major hurricanes and assist state and local emergency officials in doing the same. He emphasized that state and local government have the primary authority and lead in managing a disaster. State and local government are more familiar with its people, the situation and the geography, which are key principles to emergency management. Even though authority is pushed down to where the disaster happens, the federal government also must be able to respond, when needed. The federal government is available to provide support if the capabilities of state and local governments are overwhelmed in a way that federal support is required. Chertoff stated that they have focused on helping states and major cities prepare for the hurricane season for this reason. The preparation included reviewing emergency plans and making recommendations, conducting training between federal, state, and local officials, hurricane preparedness exercises, and working with emergency managers to ensure everyone involved understood roles and responsibilities. FEMA conducted a pre-hurricane planning and readiness conference, as a part of the process, which included both federal and state disaster community members. The purpose of the conference was to discuss new policies and provide new guidance for improved hurricane readiness and response for the 2006 hurricane season. Chertoff also stated that they have pre-designated principal federal officers and federal coordinating officers to be federal representatives in the regions and to work with their state and local

colleagues to prepare for a future disaster. In addition, FEMA's progress in tracking commodities and supplies, enhanced and speedy victims assistance, improved emergency communications, and the "new tested and experienced leadership under Chief Paulison and his Deputy, Admiral Harvey Johnson, recently retired from the Coast Guard," was also highlighted.⁵⁸

Chertoff talked about some interesting statistics, as it relates to improved hurricane preparedness. For example, he stated that in terms of commodities (basic supplies, food, water, and ice), FEMA was going to have four times as many MREs in stock going into the 2006 hurricane season compared to 2005, when facing Hurricane Katrina. In addition, there were going to be four times as many trucks of ice and twice as many trucks of water. The DHS has built a network of supplies that will enable them to sustain one million people for at least seven days.⁵⁹ The DHS has also reviewed the *NRP* to re-examine its contents to ensure they can better manage hurricanes and similar incidents over multiple locations. According to Chertoff, the result of these efforts is that DHS is in a much better position to deal with a major hurricane, compared to previous years. He went on to say that a hurricane is a disaster that is very messy and unpredictable. Despite planning, there will be some unprecedented challenges and unanticipated events. Chertoff stated that if they start with a good plan, which they have, they will be in a better position to coordinate DHS assistance with state and local officials to get assistance to those in need. In his conclusion, he stated; planning, supplies and government activity are essential, but an informed and prepared public is just as important or more important.

Paulison (2006) spoke next about the specific changes made, since Hurricane Katrina. In regards to logistics, he stated that before Hurricane Katrina, FEMA had 180 truckloads of MREs. Prior to the 2006 hurricane season, FEMA had 770 truckloads. Before Hurricane Katrina, FEMA had 600 truckloads of water. Before the 2006 hurricane season, FEMA already had 1,540 truckloads of water. In addition, 2,000 truckloads of ice were stocked prior to the 2006 hurricane season, compared to 430 truckloads before Hurricane Katrina.⁶⁰ According to Paulison, they have also signed a Memorandum of Understanding with the DLA to provide backup support, which will be critical if supplies should need replenishing.

During Hurricane Katrina, FEMA was unable to track their tractor trailers after they left the warehouse, but since that time, FEMA has acquired a sophisticated GPS that will be on every tractor trailer departing the warehouses. He also stated FEMA will be able to track them in real time by viewing a live map, which will give FEMA the ability to track every vehicle and also, access each individual commodity. When they are asked to show where the trucks are, they have the capability to provide in-transit visibility. One of Paulison's final comments was about situational awareness. He stated that they did not have good situation awareness during Hurricane Katrina, but now there are systems in place to pre-position people with voice, satellite, and video capability to send videos of what is happening back to the DHS headquarters.⁶¹ Under Secretary George Foresman of the Preparedness Directorate at DHS spoke immediately after Paulison.

Foresman talked about how the Preparedness Directorate was approaching the preparation for the 2006 hurricane season and in order to put the preparation into perspective, they looked at making changes within FEMA, examined their readiness level

across Homeland Security and across local, state, and federal readiness for the 2006 hurricane season. With this in mind, they had to ask the question, “How do we get the right level of preparation so we can get the right resources to the right place at the right time?”⁶² In answering this question, Foresman conducted a slide presentation, highlighting some of the more well-known hurricanes in the US history, such as Hurricane Camille, Hurricane Andrew, and Hurricane Ivan as a way to show the magnitude of the issues in dealing with the Hurricane Katrina recovery effort. Before ending his presentation, he stated that the Preparedness Directorate of DHS was prepared to pre-position key assets more quickly into impact areas of disasters to establish JFOs, which would allow better coordination and increase the speed of providing federal assistance to state and local officials. In addition, Foresman stated that they have identified the pre-staging areas where critical resources will be located in advance of the hurricane season so they could speed up movement of critical resources to disaster impact zones.

Next, Assistant Secretary of Defense for Homeland Defense, Paul McHale, made the following points about the actions taken by the Department of Defense:

Under the national response plan, it’s important to note that the role of the Department of Defense is to assist the Department of Homeland Security in a civilian-led response to major disasters. In short, ours is a partnership with DHS, and that partnership has never been stronger.

By June 1st, the Department of Defense will have assigned defense coordinating officers on a full-time basis in each of the ten FEMA regional offices to ensure coordinated planning and operational integration between DOD and DHS, most especially FEMA.

In coordination with the Department of Homeland Security, FEMA, the Department of Health and Human Services, and the Department of Transportation, the Department of Defense has prepared 18 pre-scripted requests

for assistance to expedite the provision of DOD support to civil authorities during the disaster response.

DOD has tremendous assets to bring to bear in order to assist that civilian-led response to any major disaster that might occur, including a hurricane in the next several months. Those assets have now been identified.⁶³

Admiral Tim Keating, Combatant Commander of Northern Command

(NORTHCOM), then talked about the NORTHCOM mission and some of their commitments in assisting FEMA in responding to natural disasters, after given direction from the President or Secretary of Defense. “The first part of our mission is to deter, prevent and defeat attacks against the United States. The second part of our mission is to provide defense support to civil authorities.”⁶⁴ He stated that they have spent significant time since Hurricane Katrina, working on coordination and communications capabilities between the Department of Defense, NORTHCOM, and the National Guard Bureau. In addition, he talked about their role in logistics. “Our role here is largely to provide--to assist in providing in-transit visibility and also to provide those Department of Defense bases for staging the comprehensive logistics system that’s been put in place.”⁶⁵

Finally, General Steven Blum from the National Guard Bureau emphasized the National Guard is always ready to assist, despite obligations overseas and on the Southwest border. “The facts speak for themselves. Three hundred and sixty-seven thousand citizen Soldiers and airmen are ready and prepared to respond to whatever comes our way during the hurricane season.”⁶⁶ He also conducted a slide presentation highlighting the states where the National Guard have protected its resources, concentrated equipment, improved communications, logistics, command and control, restocked medical sets and search and rescue equipment to ensure they are ready for the hurricane season. Before ending his presentation, he stated that there would be no

command and control issues for the 2006 hurricane season and they would have unity of effort. “We will have an increased shared awareness this year, better than we did last year, particularly in the early days of Hurricane Katrina.”

At the end of the press briefing, media representatives asked a series of questions. The questions below from Wall Street Journal Reporter, Bobby Block, are not all inclusive of the entire question and answer period.

Question: Bobby Block, Wall Street Journal. Two questions. First question is: I understand that there may be some trouble with the reimbursement of EMAC for last year, which may mean that some states may not be financially in a position to come to the aid as readily as they were.

And the second question in terms of planning

--I know you're going to love this one--what is the threshold at which you decide the states and locals can't manage and that the federal government has to step in?

Secretary Chertoff: Yeah. I'm going to ask Dave to answer the first question, but let me address the second question. There is no mathematical formula that's going to tell you at this point a state or local government has been overwhelmed.

I think we clearly have the experience of last year, which was probably the upward bound of what could conceivably be an overwhelming situation for a state and local government. How much short of that we would have to be for us to say a state or local government was overwhelmed I think is a little bit hard to predict.

What I can tell you is that we will be much more involved with the planning early on. I think that will give us a better sense of when we might be hitting the point of having an overwhelmed government. And of course we have contingency plans in effect if a government does get overwhelmed, to step in energetically in order to pick up the slack.⁶⁷

The review of literature focused on five primary areas: (1) Pre-Hurricane Katrina, (2) Disaster Relief Operations, (3) Logistics Management and defining a Twenty-First Century Logistics Management System, (4) Homeland Security's FEMA policies/procedures, and (5) Actions Taken since Hurricane Katrina. FEMA's

effectiveness in accomplishing its mission was harshly criticized during the Hurricane Katrina disaster relief operation, but steps were taken in preparation for the 2006 hurricane season that increased FEMA's ability to respond to future major hurricanes and assist state and local emergency officials in doing the same. The research methodology in the next chapter establishes the method used to investigate and ultimately answer the primary research question.

¹Jeanne Meserve and Mike Ahlers, CNN, Pre-Katrina Study Exposed FEMA Woes; available from <http://www.cnn.com/2006/US/02/08/fema.study/>; Internet; accessed 14 May 2007.

²Ibid.

³Ibid.

⁴Ibid.

⁵NBC News, Was FEMA Ready for a Disaster Like Katrina? Critics Cite Shift in Priorities Following the 9/11 Attacks; available from <http://www.msnbc.msn.com/id/9178501/>; Internet; accessed 14 May 2007.

⁶Ibid.

⁷Cooper and Block, 16

⁸Ibid., 18.

⁹Ibid., 16.

¹⁰Ibid.

¹¹Ibid.

¹²The White House, Chapter Five: Lessons Learned from Hurricane Katrina; available from <http://www.whitehouse.gov/reports/katrina-lessons-learned/chapter5.html>; Internet; accessed 14 May 2007.

¹³Ibid.

¹⁴Ibid.

¹⁵Ibid.

¹⁶Emergency Management Assistance Compact, How does EMAC work?; available from <http://www.emacweb.org/?142>; Internet; accessed 14 May 2007.

¹⁷Emergency Management Assistance Compact, EMAC Frequently Asked Questions; available from <http://www.emacweb.org/?10>; Internet; accessed 14 May 2007.

¹⁸The White House, The Federal Response to Hurricane Katrina: Lessons Learned; available from <http://www.whitehouse.gov/reports/katrina-lessons-learned>; Internet; accessed 14 May 2007.

¹⁹Ibid.

²⁰Ibid.

²¹Ibid.

²²Department of Homeland Security, Director, David Paulison Editorial on Lessons Learned From Katrina, "Weathering the Next Storm," *Washington Post*, 27 August 2006; available from <http://www.fema.gov/news/newsrelease.fema?id=29319>; Internet; accessed 14 May 2007.

²³Ibid.

²⁴Ibid.

²⁵Ibid.

²⁶Ibid.

²⁷Jacqueline Emigh, Disaster Demand Supply Chain Software, Research Shows; available from <http://www.eweek.com/article2/0,1895,1866792,00.asp>; Internet; accessed 14 May 2007.

²⁸Ibid.

²⁹Ibid.

³⁰Ibid.

³¹Department of Homeland Security, FEMA: Logistics Supply Chain; available from http://www.fema.gov/media/fact_sheets/logistic-supply-chain.shtm; Internet; accessed 14 May 2007.

³²Ibid.

³³United States Senate, Report of the Committee on Homeland Security and Governmental Affairs, *Hurricane Katrina: A Nation Still Unprepared*; available from http://hsgac.senate.gov/_files/Katrina/FullReport.pdf; Internet; accessed 14 May 2007.

³⁴Ibid.

³⁵Ibid.

³⁶Ibid.

³⁷Ibid.

³⁸Department of Homeland Security, FEMA's Logistics Supply Chain; available from http://www.fema.gov/media/fact_sheets/logistic-supply-chain.shtm; Internet; accessed 14 May 2007.

³⁹Ibid.

⁴⁰Ibid.

⁴¹Ibid.

⁴²Ibid.

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Department of Homeland Security, About FEMA; available from <http://www.fema.gov/about/index.shtm>; Internet; accessed 14 May 2007.

⁴⁶Department of Homeland Security. The National Response Plan (December 2004), iii; available from http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf. Internet. Accessed 1 May 2007.

⁴⁷Ibid., CAT-3.

⁴⁸The White House, Homeland Security Presidential Directive /HSPD-5, *Management of Domestic Incidents*; available from <http://www.whitehouse.gov/news/releases/2003/02/20030228-9.html>; Internet; accessed 14 May 2007.

⁴⁹Ibid.

⁵⁰The White House, Homeland Security Presidential Directive /HSPD-8, *National Preparedness*, 17 December 2003; available from <http://training.fema.gov/EMIWeb/IS/ICSResource/assets/HSPD-8.pdf>; Internet; accessed 14 May 2007.

⁵¹Ibid.

⁵²Department of Homeland Security, More than One Million Emergency Personnel Nationwide Complete NIMS-Related Training; available from <http://www.fema.gov/news/newsrelease.fema?id=21238>; Internet; accessed 14 May 2007.

⁵³Department of Homeland Security, Emergency Management Institute, Independent Study Program; available from <http://training.fema.gov/IS/>; Internet; accessed 14 May 2007.

⁵⁴Continuity Central, Future FEMA; available from <http://www.continuitycentral.com/news02942.htm>; Internet; accessed 14 May 2007.

⁵⁵Department of Homeland Security, Remarks as Prepared for Delivery by Homeland Security Secretary Michael Chertoff at the National Hurricane Conference; available from http://www.dhs.gov/xnews/speeches/speech_0279.shtm; Internet; accessed 14 May 2007.

⁵⁶Ibid.

⁵⁷Department of Homeland Security, Remarks by Secretary Michael Chertoff During 2006 Hurricane Season Press Briefing; available from http://www.dhs.gov/xnews/releases/press_release_0912.shtm; Internet; accessed 14 May 2007.

⁵⁸Ibid.

⁵⁹Ibid.

⁶⁰Ibid.

⁶¹Ibid.

⁶²Ibid.

⁶³Ibid.

⁶⁴Ibid.

⁶⁵Ibid.

⁶⁶Ibid.

⁶⁷Ibid.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this study is to determine if a twenty-first century logistics management system will improve FEMA's capability to deliver supplies to critical areas, during future catastrophic disaster relief operations. It will define what a twenty-first century logistics management system means for FEMA, examine FEMA's required capabilities, FEMA's capabilities during the Hurricane Katrina disaster relief operation, and evaluate DHS's timeline in establishing a twenty-first century logistics management system. The thesis will also examine FEMA's logistics capabilities by analyzing FEMA's level of response and preparedness. The benefits of quality logistics support and the consequences of insufficient support will also be explored. Finally, evaluating the inventive logistics methods used by the Fritz Institute will be important to developing potential solutions for delivering supplies to critical areas during disaster relief operations.

The organization of chapter 3 establishes the methodology the thesis will follow in answering the primary research question: Will a twenty-first century logistics management system improve FEMA's capability to deliver supplies to critical areas, during future catastrophic disaster relief operations? This chapter will also analyze the purpose and scope of the thesis and highlight the research methodology used to analyze the research and present the findings in chapter 4.

Methodology

The analysis of the research question will be developed by using the definitions in chapter 1, as a foundation. However, additional definitions will be used, placing more emphasis on key definitions, such as defining a twenty-first century logistics management system. The analysis will review FEMA's response and its current logistics capabilities versus its capabilities during the Hurricane Katrina disaster relief operation. This chapter will also address the secondary questions leading to the answer of the primary research question.

1. What is a twenty-first century logistics management system?
2. What actions are required for FEMA during INS?
3. What were FEMA logistics capabilities during the Hurricane Katrina disaster relief operation?
4. What is DHS's timeline for establishing a twenty-first century logistics management system?

Twenty-First Century Logistics Management System

Based on the level of response required for a catastrophic disaster, a twenty-first century logistics management system has three primary components: (1) adequately trained disaster relief personnel, (2) the latest supply chain management technology to track commodities, and (3) pre-established contracts with other federal agencies and private businesses that gives FEMA the capability to provide responsive logistics in any incident of national significance. According to the *NRP Catastrophic Incident Annex*, there are planning assumptions to be considered in managing recovery operations, and they must also be considered in the most modern logistics management system:

1. A catastrophic incident may occur with little or no warning. Some incidents, such as rapid disease outbreaks, maybe well underway before detection.
2. The incident may cause significant disruption of the area's critical infrastructure, such as energy, transportation, telecommunications, and public health and medical systems.
3. Federal support must be provided in a timely manner to save lives, prevent human suffering and mitigate severe damage. This may require mobilizing and deploying assets before they are requested via normal NRP protocols.¹

Federal Emergency Management Agency's Required Actions

FEMA's required response to INS can be found in the *NRP*, dated December 2004. According to the *NRP*, when state and local resources and capabilities are overwhelmed, FEMA is required to provide supplemental support, after federal assistance is requested and when the President has made a disaster or emergency declaration.² In addition, the *NRP Logistics Management Support Annex* states that DHS FEMA is responsible for logistics planning and execution. In INS, such as Hurricane Katrina, the federal government or other national assemblies are expected to provide immediate assistance in one or more of the ESF, according to the *NRP Catastrophic Incident Annex*.³ ESFs are discussed further in chapter 4, Analysis.

FEMA's Logistics Capabilities During Hurricane Katrina Disaster Relief Operation

During the disaster relief operation, FEMA provided logistics support for search and rescue, established disaster centers, provided food, water and ice, processed federal

disaster claims, and participated in short- and long-term public works projects, such as removing debris and rebuilding infrastructure. On the other hand, FEMA lacked sufficient transportation planning and an adequate number of staff personnel in Louisiana, to provide responsive logistics support. FEMA's transportation contractor, Landstar, did not own its own vehicles, which was problematic in finding enough drivers to move supplies over a weekend. In addition, the number of available staff personnel in Louisiana, was insufficient in supporting a 24-hour operations center during disaster relief operations.

Department of Homeland Security Timeline

Establishing a twenty-first century logistics management system was to be completed before the 2006 hurricane season, based on the steps taken by the DHS. According to Secretary Chertoff, the steps taken over the past six months after Hurricane Katrina would increase their ability to respond to future major hurricanes and assist state and local emergency officials in doing the same. Chertoff highlighted in his remarks during a 2006 Hurricane Season Press Briefing in Washington, DC, on 23May 2006, that in terms of commodities (basic supplies, food, water, and ice), FEMA was going to have four times as many MREs in stock going into the 2006 hurricane season compared to 2005, when facing Hurricane Katrina. In addition, there were going to be four times as many trucks of ice and twice as many trucks of water.⁴

Summary

Chapter 3 presented the thesis research methodology used to investigate and ultimately answer the primary research question: The chapter established the

methodology that chapter 4 will follow to analyze the research. Chapter 3 outlined how the thesis answers the secondary research questions. Recommendations for logistics support for future catastrophic disaster relief operations will be included in chapter 5.

¹National Response Plan 2004, CAT-3.

²Ibid., 8.

³Ibid., CAT-2.

⁴Remarks by Secretary Michael Chertoff During 2006 Hurricane Season Press Briefing; available from http://www.dhs.gov/xnews/releases/press_release_0912.shtm; Internet; accessed 14 May 2007.

CHAPTER 4

ANALYSIS

The line between disorder and order lies in logistics.¹

Sun Tzu

As a federal organization, the US Homeland Security's FEMA must be prepared at all times to supplement the efforts of state and local emergency officials, to include logistics support during disaster relief operations. FEMA's required response to INS can be found in the *NRP*, dated December 2004. It had only been in effect for seven months, prior to Hurricane Katrina. The *NRP* is a vital document because it defines all catastrophic occurrences as INS and combines all homeland security policies and federal agency response plans into one national strategy. It consists of 426 pages, to include appendixes and annexes and is applicable only to actual or potential INS that require "a coordinated response by an appropriate combination of Federal, State, local, tribal, private-sector, and nongovernmental entities."² Even though the *NRP* was effective in December 2004, the plan was still in the implementation process during Hurricane Katrina.

According to the *NRP* implementation instructions, the plan was to be applied in three phases. During the landfall of Hurricane Katrina, the *NRP* was in Phase III of implementation. The goals for each implementation phase are as follows:

Phase I--Transitional Period (0 to 60 days): This 60-day timeframe is intended to provide a transitional period for departments and agencies and other organizations to modify training, designate staffing of *NRP* organizational elements, and become familiar with *NRP* structures, processes, and protocols.

Phase II--Plan Modification (60 to 120 days): This second 60-day timeframe is intended to provide departments and agencies the opportunity to

modify existing Federal interagency plans to align with the NRP and conduct necessary training.

Phase III--Initial Implementation and Testing (120 days to 1 year): Four months after its issuance, the NRP is to be fully implemented, and the INRP, FRP, CONPLAN, and FRERP are superseded. Other existing plans remain in effect, modified to align with the NRP. During this timeframe, the Department of Homeland Security (DHS) will conduct systematic assessments of NRP coordinating structures, processes, and protocols implemented for actual Incidents of National Significance (defined on page 4 of the NRP), national-level homeland security exercises, and National Special Security Events (NSSEs). These assessments will gauge the plan's effectiveness in meeting specific objectives outlined in Homeland Security Presidential Directive-5 (HSPD-5). At the end of this period, DHS will conduct a 1-year review to assess the implementation process and make recommendations to the Secretary on necessary NRP revisions. Following this initial review, the NRP will begin a deliberate 4-year review and reissuance cycle.³

Because the NRP was to be implemented in a minimum of four months, the time frame could be considered too short at the federal level because FEMA has the responsibility to initiate proactive mitigation activities and train first responders, but the NRP displays a clear implementation timeline and guidance on how federal, state, and local governments should respond during INS.

According to the NRP, when state resources and capabilities are overwhelmed, Governors can request federal assistance when the President has made a disaster or emergency declaration.⁴ As the chief executive officer of a State, the Governor is responsible for the welfare and public safety of its residents. The Governor's responsibilities are summarized below:

1. Is responsible for coordinating State resources to address the full spectrum of actions to prevent, prepare for, respond to, and recover from incidents in an all-hazards context to include terrorism, natural disasters, accidents, and other contingencies;

2. Under certain emergency conditions, typically has police powers to make, amend, and rescind orders and regulations;

3. Provides leadership and plays a key role in communicating to the public and in helping people, businesses, and organizations cope with the consequences of any type of declared emergency within State jurisdiction;

4. Encourages participation in mutual aid and implements authorities for the State to enter into mutual aid agreements with other States, tribes, and territories to facilitate resource-sharing;

5. Is the Commander-in-Chief of State military forces (National Guard when in State Active Duty or Title 32 Status and the authorized State militias); and Requests federal assistance when it becomes clear that state or tribal capabilities will be insufficient or have been exceeded or exhausted.⁵

Mayors, city managers, or local chief executive officers also have a role in responding to INS. According to the NRP, they are responsible for the public safety and welfare of the people in their towns or cities.⁶ The local chief executive officer's responsibilities are:

1. Is responsible for coordinating local resources to address the full spectrum of actions to prevent, prepare for, respond to, and recover from incidents involving all hazards including terrorism, natural disasters, accidents, and other contingencies;

2. Dependent upon State and local law, has extraordinary powers to suspend local laws and ordinances, such as to establish a curfew, direct evacuations, and, in coordination with the local health authority, to order a quarantine;

3. Provides leadership and plays a key role in communicating to the public, and in helping people, businesses, and organizations cope with the consequences of any type of domestic incident within the jurisdiction;

4. Negotiates and enters into mutual aid agreements with other jurisdictions to facilitate resource-sharing; and

5. Requests state and, if necessary, federal assistance through the Governor of the State when the jurisdiction's capabilities have been exceeded or exhausted.⁷

The NRP also identifies a Tribal Chief Executive Officer at the local level. Just as the Governor and Local Chief Executive Officer are responsible for the welfare and public safety of the people in their jurisdiction, so is the Tribal Chief Executive Officer. As authorized by tribal government, the tribal chief executive officer's responsibilities are:

1. Is responsible for coordinating tribal resources to address the full spectrum of actions to prevent, prepare for, respond to, and recover from incidents involving all hazards including terrorism, natural disasters, accidents, and other contingencies;

2. Has extraordinary powers to suspend tribal laws and ordinances, such as to establish a curfew, direct evacuations, and order a quarantine;

3. Provides leadership and plays a key role in communicating to the tribal nation, and in helping people, businesses, and organizations cope with the consequences of any type of domestic incident within the jurisdiction;

4. Negotiates and enters into mutual aid agreements with other tribes/jurisdictions to facilitate resource-sharing;

5. Can request state and federal assistance through the Governor of the State when the tribe's capabilities have been exceeded or exhausted; and

6. Can elect to deal directly with the federal government. (Although a State Governor must request a Presidential disaster declaration on behalf of a tribe under the Stafford Act, federal agencies can work directly with the tribe within existing authorities and resources.).⁸

In reviewing the role and responsibilities of the DHS, it is important to note that the *Homeland Security Act of 2002* established DHS to: (1) prevent terrorist attacks in the US and reduce vulnerability of the country to terrorism, natural disasters and other emergencies, (2) minimize damage and assist in the recovery from terrorist attacks, natural disasters and other emergencies, and (3) the act also designates the DHS as a central point in respect to natural and manmade catastrophes and emergency planning.⁹ According to HSPD-5, the Secretary of Homeland Security is responsible for coordinating federal operations in the US, in order to prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies. In addition, the HSPD-5 designates the Secretary of Homeland Security as the "principal Federal official" for domestic incident management. In this role, the Secretary is also responsible for ensuring coordination is conducted for federal resources used to respond to or recover from terrorists attacks, major disasters, and other emergencies if or when the following four conditions are present:

1. A federal department or agency acting under its own authority has requested DHS assistance;

2. The resources of State and local authorities are overwhelmed and federal assistance has been requested;
3. More than one federal department or agency has become substantially involved in responding to the incident; or
4. The Secretary has been directed to assume incident management responsibilities by the President.¹⁰

Even though the second condition was present during Hurricane Katrina, the magnitude of events associated with the hurricane caused FEMA's capabilities to be overcome, after receiving requests from local and state government officials for federal assistance. According to Secretary Chertoff, the federal government is responsible for meeting the requests from the state during a disaster and afterwards, but FEMA's ability to get supplies to the needed areas in a timely manner was limited because its logistics systems were not adequate for an enormous catastrophic disaster. Although FEMA's mission is to lead the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident, the task of providing logistics support is defined in the NRP.

According to the NRP Logistics Management Support Annex, the DHS FEMA is responsible for logistics planning and execution. If additional support is needed, one or more of the fifteen ESF are activated.¹¹ EFSs are defined in the NRP as functional areas that are comprised of government and some private sector capabilities that provide support, resources and services.¹² For example, ESF 1--Transportation could need support from ESF 2--Communication and ESF 10--Oil and Hazardous Material Response. The fifteen EFSs are listed in table 1.

Table 1. Fifteen Emergency Support Functions

ESF - 1	Transportation
ESF - 2	Communications
ESF - 3	Public Works and Engineering
ESF - 4	Firefighting
ESF - 5	Emergency Management
ESF - 6	Mass Care, Housing and Human Services
ESF - 7	Resource Support
ESF - 8	Public Health and Medical Services
ESF - 9	Urban Search and Rescue
ESF - 10	Oil and Hazardous Materials Response
ESF - 11	Agriculture and Natural Resources
ESF - 12	Energy
ESF - 13	Public Safety and Security
ESF - 14	Long-Term Community Recovery and Mitigation
ESF - 15	External Affairs

Source: Department of Homeland Security, Emergency Management Institute; available from <http://training.fema.gov/EMIWeb/IS/ICSResource/assets/NRPwithAppendixesAndAnnexes.pdf>; Internet; accessed 6 April 2007.

In the case of a catastrophic incident, such as Hurricane Katrina, the federal government or other national assemblies are expected to provide immediate assistance in one or more of the following ESFs, according to the NRP Catastrophic Incident Annex:

1. ESF 6: Mass Care, Housing and Human Services
2. ESF 8: Public Health and Medical Services
3. ESF 9: Urban Search and Rescue
4. ESF 15: External Affairs.¹³

Table 2, explains each one in more detail.

Table 2. Emergency Support Functions

ESF - 6	Mass Care, Housing and Human Services	The ability to provide temporary shelter, food, emergency first aid, clothing and other essential life support to people may be complicated by contaminated resources or facilities.
ESF - 8	Public Health and Medical Services	There is significant need for public health and medical support, including mental health services. Medical support is required not only at medical facilities, but at casualty evacuation points, evacuee and refugee points and shelters, and at other locations to support field operations. In addition, any contamination requirement increases the requirement for technical assistance.
		Medical Equipment and Supplies: Shortages of available supplies of preventive and therapeutic pharmaceuticals and qualified medical personnel to administer available prophylaxis may forestall additional illnesses, and reduce the impact of disease among those already exposed.
		Casualty and Fatality Management and Transportation: Federal resources may be required to manage the transportation and storage of deceased, injured and exposed victims if their numbers are extremely high. In addition, the immense numbers of casualties are likely to overwhelm the bed capacities of local and State medical facilities.
ESF - 9	Urban Search and Rescue	Resources and personnel to perform operational activities (e.g. locating, extricating and providing onsite medical treatment to victims trapped in collapsed structures) are limited. If search and rescue operations are required in areas of contamination, the limited availability of properly equipped resources supports or underscores the need for prompt Federal response.
ESF - 15	External Affairs	Public Information: When State and local public communications channels are overwhelmed during a catastrophic incident, the Federal Government must immediately provide resources to assist in delivering clear and coherent public information guidance and consistent messages to the affected areas.

Source: US Department of Homeland Security, NRP Catastrophic Incident Annex; available from http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf; Internet; accessed 9 April 2007.

The steps taken by the federal government, prior to the 2006 hurricane season, implies that a twenty-first century logistics system is in place and will improve FEMA's capability to deliver supplies to critical areas, during future catastrophic disaster relief operations. According to Chertoff, the steps taken over the past six months after Hurricane Katrina would increase their ability to respond to future major hurricanes and assist state and local emergency officials in doing the same. Chertoff also talked about statistics, as it relates to improved hurricane preparedness. For instance, he stated that in terms of commodities, basic supplies, food, water, ice, they were going to have four times as many MREs in stock going into the 2006 hurricane season compared to 2005, when facing Hurricane Katrina. In addition, there were going to be four times as many trucks of ice and over two times as many trucks of water. The DHS has built a network of supplies that will enable them to sustain one million people for at least seven days.¹⁴ Next, FEMA Director, Paulison spoke about the specific changes made, since Hurricane Katrina (see table 3).

Table 3. Commodities

2005 (Before Hurricane Katrina)	Truckloads	2006 (Before 2006 Hurricane Season)	Truckloads
MRE	180	MRE	770
Water	600	Water	1540
Ice	430	Ice	2000

Source: US Department of Homeland Security, Remarks by Secretary Michael Chertoff During 2006 Hurricane Season Press Briefing; available from http://www.dhs.gov/xnews/releases/press_release_0912.shtm; Internet; accessed 6 April 2007.

Previously, in a speech to the National Hurricane Center on 12 April 2006, Chertoff stated that, “FEMA is implementing a new commodity tracking system that will allow real-time visibility into the movement and delivery of supplies, which will improve FEMA’s ability to manage and track inventories.”¹⁵ Later, Paulison confirmed, in his speech to the National Press Club on 6 December 2006, that FEMA has focused on the improvement of logistical operations within the organization and has taken significant steps to address problems identified during the Hurricane Katrina disaster relief operation by the execution of Phase I of the Total Asset Visibility Program in the Gulf States that are prone to hurricanes by attaining and installing 20,000 GPS units, affording FEMA the capacity of tracking commodities and ensuring they are going to the right place. Additional capabilities and assets are being accessed through its partnership with the DLA. Advanced mission assignments and contracts have been established, as part of contingency planning. Memorandum of Understandings and Interagency Agreements have also been set up with other federal agencies, the private sector, and voluntary agencies in order to conduct advance coordination between organizations and avoid delays in providing needed services to affected communities.

Although FEMA has improved its ability to respond to future catastrophic disasters, recommendations will be made in the next chapter on how FEMA can increase its ability to provide quality logistics support for future catastrophic disaster relief operations.

¹Air University, Quotes; available from http://www.au.af.mil/au/awc/awcgate/navy/log_quotes_navsup.pdf; Internet; accessed 4 May 2007.

²National Response Plan 2004, 3.

³Ibid., ix.

⁴Ibid., 8.

⁵Ibid.

⁶Ibid.

⁷Ibid.

⁸Ibid., 8-9.

⁹Ibid., 9.

¹⁰Ibid.

¹¹Ibid., LOG-9.

¹²Ibid., 10.

¹³Ibid., CAT-2.

¹⁴Ibid.

¹⁵Department of Homeland Security, Remarks as Prepared for Delivery by Homeland Security Secretary Michael Chertoff at the National Hurricane Conference; available from http://www.dhs.gov/xnews/speeches/speech_0279.shtm; Internet; accessed 14 May 2007.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

Conclusion

Despite being forewarned, the DHS FEMA was not adequately prepared to supplement state and local emergency personnel, or to provide logistics support during the Hurricane Katrina disaster relief operation. The disaster relief operation demonstrated a need for FEMA to have a more efficient logistics management system. In preparation for the 2006 hurricane season, FEMA created a twenty-first century logistics management system by training disaster relief personnel, establishing a commodity tracking system, and establishing contracts with the DLA and other organizations to improve FEMA's capability to deliver supplies to critical areas, during future catastrophic disaster relief operations.

This thesis began with the question: Will a twenty-first century logistics management system improve FEMA's capability to deliver supplies to critical areas during future catastrophic disaster relief operations? After thorough examination of the NRP and FEMA's capabilities before and after Hurricane Katrina, the thesis finds that FEMA has improved its capability to deliver supplies to critical areas during future catastrophic disaster relief operations. The thesis demonstrates that FEMA has addressed its challenges with communication, logistics management, tracking assets, situational awareness, and contracting. It has also demonstrated FEMA's enhanced capability to track and manage the supply chain, which is instrumental for visibility of supplies and its ability to deliver commodities to the right place, the right time, and in the right quantity.

The *NRP*, the capstone document for Homeland Security, governs response levels and provides a framework for managing national emergencies. State and local government have the primary responsibility for responding to natural disasters and the federal government is responsible for providing supplemental support, if state and local governments are overwhelmed. The *NRP* also provides a structure and procedure for how federal assistance to state and local emergency officials will occur, while highlighting the responsibilities of the governor, mayor, and tribal leaders. The *NRP* and its companion documents, HSPD-5, *Management of Domestic Incidents*, and HSPD-8, *National Preparedness and the NRP*, are key references to guide FEMA in its mission of leading the effort in preparing the nation for all domestic emergencies and effectively managing the federal response and recovery efforts, after any incident of national significance.

Before and after Hurricane Katrina, managerial and logistical weaknesses were identified. These issues have been dealt with by hiring leaders with emergency management experience and acquiring a sophisticated GPS, providing FEMA with the capability to track commodities departing the warehouses. Additional capabilities and assets are being accessed through its partnership with DLA. Advanced mission assignments and contracts have been established, as part of contingency planning. Memorandum of understandings and interagency agreements have also been set up with other federal agencies; the private sector, and voluntary agencies in order to conduct advance coordination between organizations and avoid delays in providing needed services to affected disaster areas.

Recommendations

The DHS should ensure all federal, state, and local emergency officials are trained on the revised *NRP*, when the review is completed in June 2007, to assess the plan effectiveness and ensure everyone involved understand roles and responsibilities and identify further improvements. In addition, DHS should continue reviewing emergency plans and making recommendations; conducting training between federal, state, and local officials; and conducting hurricane preparedness exercises.

The DHS should purchase its own fleet of trucks and hire drivers or use a transportation contractor that owns its own fleet. This will allow FEMA to deliver supplies to needed areas during catastrophic disasters, without delays in transporting commodities.

The DHS should consider partnering with the Fritz Institute for further enhancement of its logistics management system by evaluating the Fritz Institute's Certification in Humanitarian Logistics Program to be used to supplement the education of disaster relief personnel with limited emergency management experience. Based on my research, it appears the Fritz Institute is focused on finding better ways to manage disaster relief operations and exploring the opportunities to work together and identifying shared resources can be instrumental to providing faster assistance to disaster victims.

The recommendations provide the foundation for improving FEMA's capability to supplement state and local emergency personnel and to provide logistics support during future catastrophic disaster relief operations. Taken collectively or separately, the recommendations will improve FEMA's response to future catastrophic disasters.

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